PROVINCE POND

Henry County

2004 Fish Management Report

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EXECUTIVE SUMMARY

- Province Pond is an approximately 60-acre impoundment located south of State Road 36 between Mount Summit and Sulphur Springs, Indiana.

- In 1990, the Division of Fish and Wildlife (DFW) purchased 210 acres, including the existing pond and surrounding land, to create the Province Pond Wetland Conservation Area.

- Province Pond was stocked with largemouth bass, bluegill, redear sunfish, and channel catfish in 2000. A 2001 fisheries survey determined that the bluegill and redear stockings were unsuccessful. Therefore, 52,000 bluegill and 30,000 redear were stocked in the fall of 2001.

- A fisheries survey was conducted from June 15 to 17, 2004 to assess the predator/prey balance, determine age and growth of the dominant sport fish, and evaluate panfish recruitment.

- A total of 357 fish representing six species was collected. Bluegill was the most abundant species collected by number (55%), followed by largemouth bass (22%), redear sunfish (11%), and channel catfish (6%). The four most abundant species collected by weight were channel catfish (32%), largemouth bass (28%), bluegill (23%), and redear sunfish (7%).

- Bluegill ranged in length from 1.8 to 8.3 in and averaged 5.6 in. Forty-eight percent of the bluegill collected were harvestable size (6 in or larger). Most harvestable bluegill were age 3.

- A total of 78 largemouth bass that weighed 34 lbs was collected. Largemouth bass ranged in length from 4.5 to 13.3 in and averaged 9.6 in. Approximately 67% of the bass collected were age 2.

- Thirty-eight redear sunfish that weighed 8 lbs were collected. Sixty-six percent of redear were considered harvestable (6 in or larger). Redear ranged in length from 4.2 to 9.9 in and averaged 6.4 in. Eighty-seven percent of the redear sunfish collected were age 2.

- Overall, 22 channel catfish were collected and ranged in length from 11.3 to 20.6 in and averaged 17.0 in. Even though channel catfish were present in good numbers, biennial stockings of 3,000 channel catfish (8 in or larger) should continue in order to maintain a quality catfish fishery.

- In 2004, herbicide treatments targeting Eurasian watermilfoil, American pondweed, and leafy pondweed were conducted to improve shoreline and boating access. Vegetation control should continue annually to provide reasonable access to the pond while minimizing the impacts to suitable waterfowl habitat.

INTRODUCTION

Province Pond is an approximately 60-acre impoundment located south of State Road 36 between Mount Summit and Sulphur Springs, Indiana. Once nearly an 80-acre natural "kettle pothole" lake, it was drained to a size of only 12 acres. In 1990, the Division of Fish and Wildlife (DFW) purchased 210 acres, including the existing pond and surrounding land, to create the Province Pond Wetland Conservation Area. In the mid 1990's a levee and water control structure were constructed to impound water over much of the original lakebed.

The fish community in the shallow pond was eradicated during construction as it was comprised mostly of stunted carp. Re-stocking of Province Pond with largemouth bass, bluegill, redear sunfish, and channel catfish did not occur until 2000 when sufficient water was impounded. A fisheries survey in September 2001 determined that the bluegill and redear stockings were unsuccessful. Therefore, 52,000 bluegill and 30,000 redear were stocked in the fall of 2001. The last fisheries survey was conducted in 2002 and showed that all species were growing well, however there was some concern over the predator/prey balance.

In 2004, a fisheries survey was conducted to assess the predator/prey balance, determine age and growth of the dominant sport fish, and evaluate panfish recruitment.

METHODS

A fisheries survey was conducted from June 15 to 17, 2004. Physical and chemical characteristics were collected for water quality and measured in the deepest area of the lake according to the DFW sampling guidelines (Shipman 2001). Submersed aquatic vegetation was sampled on July 19, 2004, using guidelines written by Pearson (2004).

Fish were collected using three sampling gears. Pulsed DC nighttime, shoreline electrofishing was conducted for 0.75 h with two dippers. Two trap nets and two experimental-mesh gill nets were also fished overnight. All fish collected were measured to the nearest 0.1-in TL. Average weights for Fish Management District 5 were used to estimate the weight of all fish collected. Scales were taken from largemouth bass, bluegill, redear sunfish, and black crappie for age and growth analysis. Proportional stock density (PSD) was calculated for largemouth bass and bluegill (Anderson and Neumann 1996). The Bluegill Fishing Potential Index (BGFP), developed by Ball and Tousignant, 1996, was utilized to assess the bluegill fishing opportunities at Province Pond.

RESULTS

Water temperature at Province Pond on June 15, 2004 was 78° F. Dissolved oxygen was not measured. Conductivity was 210 µS and the Secchi disk reading was 4.0 ft.

Eight species of submersed aquatic vegetation were collected. Coontail, southern naiad, Eurasian watermilfoil, and leafy pondweed were most prevalent. The maximum depth of submersed vegetation growth was 10.0 ft. The mean number of species per sampling location was 2.38 and the maximum number of species found per site was 6.0. Non-submersed vegetation observed included filamentous algae, watermeal, duckweed, and smartweed.

Altogether, 357 fish representing six species were collected with an estimated weight of 114 lbs. Bluegill was the most abundant species collected by number (55%), followed by largemouth bass (22%), redear sunfish (11%), and channel catfish (6%). The four most abundant species collected by weight were channel catfish (32%), largemouth bass (28%), bluegill (23%), and redear sunfish (7%).

Overall, 196 bluegill that weighed an estimated 28 lbs were collected. Electrofishing yielded a CPUE of 185.3/h. Bluegill ranged in length from 1.8 to 8.3 in and averaged 5.6 in. Bluegill PSD was 35. Forty-eight percent of the bluegill collected were harvestable size (6 in or larger) which is a significant improvement from 5% collected in 2002. At least 93% of harvestable size bluegill were age 3. This year class spawned successfully in 2002 producing a large year class of age-2 bluegill that averaged 4.7 in. The BGFP score was 24 which qualifies the bluegill fishery as good.

A total of 78 largemouth bass that weighed an estimated 34 lbs was collected. Electrofishing yielded a CPUE of 104.0/h. Largemouth bass ranged in length from 4.5 to 13.3 in and averaged 9.6 in. Largemouth bass PSD was 19. Approximately 62% of the bass collected were age 2.

Thirty-eight redear sunfish that weighed an estimated 8 lbs were collected. This was an improvement from 2002 when only seven redear were collected. Sixty-six percent of redear were considered harvestable (6 in or larger). Redear ranged in length from 4.2 to 9.9 in and averaged 6.4 in. At least 87% of the redear sunfish collected were age 2.

Overall, 22 channel catfish were collected which comprised 6% of the sample by number and 32% by weight. Channel catfish ranged in length from 11.3 to 20.6 in and averaged 17.0 in. All but one of the channel catfish collected were considered harvestable size (12 in or larger).

Nineteen black crappie that weighed a combined 5 lbs were collected. Black crappie ranged in length from 5.1 to 8.8 in and averaged 7.8 in. Age-2 and age-3 crappie were collected. Black crappie were not stocked by the DFW. Currently, their reproduction has been limited and they do not appear to be negatively impacting the fishery.

The only other species collected was fathead minnow. These fish were likely introduced as a result of an angler emptying their bait bucket into the pond.

DISCUSSION

The main focus of the 2004 fisheries survey was to examine the predator/prey (largemouth bass/bluegill) balance within Province Pond. The relative abundance of largemouth bass and bluegill was 22% and 55%, respectively. Additionally, largemouth bass and bluegill populations showed good size structure. Bluegill ranged in length from 1.8 to 8.3 in and largemouth ranged in length from 4.5 to 13.3 in. Successful reproduction and recruitment by largemouth bass and bluegill was evident from the collection of age-2 fish.

Age-1 redear sunfish were not collected in the present survey. Even though this could have been the result of sampling bias (age-1 sunfish are typically too small to be sampled effectively), it was likely due to the absence of sexually mature redear in the population. According to Pflieger (1997), redear sunfish are not sexually mature until age 2 or 3. Now that the population of redear is older and at least 87% are age 2, their reproductive success should improve.

Channel catfish are usually unable to sustain their population in small impoundments due to limited spawning habitat and predation of young-of-the-year catfish by largemouth bass. Even though channel catfish were present in good numbers, biennial stockings of 3,000 channel catfish (8 in or larger) should continue to maintain a quality catfish fishery.

Submersed vegetation has been abundant in Province Pond since its renovation. In 2004, herbicide treatments targeting Eurasian watermilfoil, American pondweed, and leafy pondweed were conducted to improve shoreline and boating access. Vegetation control should continue annually to provide reasonable access to the pond while minimizing the impacts to suitable waterfowl habitat.

Bluegill, redear sunfish, channel catfish, and a few black crappie are all available for anglers to target. Bluegill up to 8.3 in and redear up to 9.9 in were collected. No largemouth

bass over 14 in were collected but anglers can expect to catch legal-size largemouth within the next year as the population matures. However, anglers are encouraged to release largemouth bass over 14 in to sustain a dense predator population and prevent panfish from overpopulating.

RECOMMENDATIONS

- The Division of Fish and Wildlife should continue biennial stockings of 3,000 channel catfish. Stocked fish should average at least 8 in.

- Vegetation control should continue annually in provide reasonable access to the pond while minimizing the impacts to suitable waterfowl habitat.

LITERATURE CITED

Anderson, R.O. and R.M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-481 *in* B.R. Murphy and D.W. Willis, editors. Fisheries Techniques 2nd edition. American Fisheries Society, Bethesda, Maryland.

Ball, R.L. and J.N. Tousignant. 1996. The development of an objective rating system to assess bluegill fishing in lakes and ponds. Research report. Indiana Department of Natural Resources. Indianapolis, Indiana. 18 pp.

Pearson, J. 2004. A proposed sampling method to assess occurrence, abundance and distribution of submersed aquatic plants in Indiana lakes. Indiana Department of Natural Resources. Indianapolis, Indiana. 37 pp.

Pflieger, W.L. 1997. The fishes of Missouri, Revised edition. Conservation Commission of the State of Missouri, Jefferson City, Missouri. 372pp.

Shipman, S.T. 2001. Manual of fisheries survey methods. Indiana Department of Natural Resources. Division of Fish and Wildlife. Indianapolis, Indiana. 58 pp.

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Date: January 30, 2007

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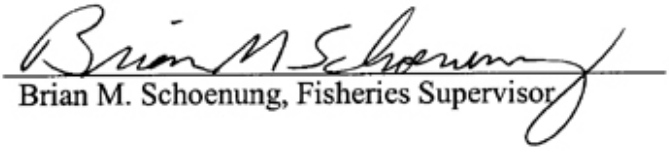
Approved by: 
Brian M. Schoenung, Fisheries Supervisor

Date: June 19, 2008

LAKE SURVEY REPORT

Type of Survey: [ ] Initial Survey [x] Re-Survey

Lake Name	County	Date of survey (Month, day, year)
Province Pond	Henry	6/15-17/2004
Biologist's name		**Date of approval (Month, day, year)**
J. Rhett Wisener		6/19/2008

LOCATION

Quadrangle Name	Range	Section
Sulphur Springs	10E	20
Township Name	**Nearest Town**	
18N	Mount Summit	

ACCESSIBILITY

State owned public access site	Privately owned public access site	Other access site
Boat ramp and entire shoreline owned by state		

Surface acres	Maximum depth	Average depth	Acre feet	Water level	Extreme fluctuations
60	11 ft.	est. 4 ft.	est. 240 ac. Ft.	1086 msl	12 in.

Location of benchmark: Unknown

INLETS

Name	Location	Origin
None		

OUTLETS

Name	Location
Bell Lake Branch	West side

Water level control: Stop-log structure

POOL	ELEVATION (Feet MSL)	ACRES
TOP OF DAM		
TOP OF FLOOD CONTROL POOL		
TOP OF CONSERVATION POOL	1086	60
TOP OF MINIMUM POOL		
STREAMBED		

Bottom type

[ ]	Boulder
[x]	Gravel
[ ]	Sand
[x]	Muck
[x]	Clay
[ ]	Marl

Watershed use: Nearly the entire watershed is part of Province Pond Wetland Conservation Area

Development of shoreline: Boat ramp and associated parking lot

Previous surveys and investigations: Fisheries Survey: 2001 and 2002

SAMPLING EFFORT					
ELECTROFISHING	Day hours		Night hours 0.75		Total hours 0.75
TRAP NETS	Number of traps 2		Number of Lifts 2		Total effort 2 lifts
GILL NETS	Number of nets 2		Number of Lifts 2		Total effort 2 lifts
ROTENONE	Gallons	ppm	Acre Feet Treated	SHORELINE SEINING	Number of 100 Foot Seine Hauls

PHYSICAL AND CHEMICAL CHARACTERISTICS	
Color: Brownish	Turbidity: 4 Feet 0 Inches (SECCHI DISK)
Alkalinity (ppm)*: Surface: 102.6 Bottom: 85.5	pH: Surface: 9.3 Bottom: 9.3
Conductivity: 210 microsiemens	Air temperature: °F
Water chemistry GPS coordinates: N W	

TEMPERATURE AND DISSOLVED OXYGEN (D.O.)								
DEPTH (FEET)	Degrees (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)
SURFACE	78		36			72		
2			38			74		
4			40			76		
6			42			78		
8			44			80		
10			46			82		
12			48			84		
14			50			86		
16			52			88		
18			54			90		
20			56			92		
22			58			94		
24			60			96		
26			62			98		
28			64			100		
30			66					
32			68					
34			70					

COMMENTS

*ppm-parts per million

Occurrence and abundance of submersed aquatic plants in Province Pond

County:	Henry	Sites with plants:	40	Mean species/site:	2.38
Date:	7/19/2004	Sites with native plants:	40	Standard error (ms/s):	0.20
Secchi (ft):	4.0	Number of species:	8	Mean native species/site:	2.00
Max. plant depth (ft):	10.0	Number of native species:	6	Standard error (mns/s):	0.16
Trophic status:	Eutrophic	Maximum species/site:	6	Species diversity:	0.76
Total sites:	40			Native species diversity:	0.69

All depths (0 to 20 ft)	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
Coontail	92.5	7.5	42.5	17.5	32.5	51.5
Southern naiad	55.0	45.0	7.5	20.0	27.5	41.0
Eurasian watermilfoil	35.0	65.0	27.5	5.0	2.5	11.0
Leafy pondweed	25.0	75.0	25.0	0.0	0.0	5.0
American pondweed	15.0	85.0	12.5	2.5	0.0	4.0
Brittle naiad	10.0	90.0	7.5	2.5	0.0	3.0
Filamentous Algae	10.0	90.0	10.0	0.0	0.0	2.0
Sago pondweed	2.5	97.5	2.5	0.0	0.0	0.5
Curlyleaf pondweed	2.5	97.5	2.5	0.0	0.0	0.5

Other observed plants: duckweed, watermeal, and smartweed

SPECIES AND RELATIVE ABUNDANCE OF FISHES COLLECTED BY NUMBER AND WEIGHT					
*COMMON NAME OF FISH	NUMBER	PERCENT	LENGTH RANGE (inches)	WEIGHT (pounds)	PERCENT
Bluegill	196	54.9	1.8 - 8.3	28.00	23.3
Largemouth bass	78	21.8	4.5 - 13.3	33.82	28.1
Redear sunfish	38	10.6	4.2 - 9.9	8.26	6.9
Channel catfish	22	6.2	11.3 - 20.6	38.68	32.2
Black crappie	19	5.3	5.1 - 8.8	4.78	4.0
Fathead minnow	4	1.1	1.7 - 2.2	0.04	< 0.1
Total	357			113.58	

*Common names of fishes recognized by the American Fisheries Society.

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF Bluegill									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5	1	0.5	0.01	not aged	19.5				
2.0	7	3.6	0.01	1	20.0				
2.5	6	3.1	0.01	1	20.5				
3.0	7	3.6	0.02	1, 2	21.0				
3.5	7	3.6	0.03	2	21.5				
4.0	23	11.7	0.04	2	22.0				
4.5	24	12.2	0.06	2, 3	22.5				
5.0	18	9.2	0.08	2, 3	23.0				
5.5	9	4.6	0.11	2, 3	23.5				
6.0	15	7.7	0.15	2, 3	24.0				
6.5	19	9.7	0.20	3	24.5				
7.0	35	17.9	0.25	3	25.0				
7.5	21	10.7	0.31	3	25.5				
8.0	4	2.0	0.38	not aged	26.0				
8.5					TOTAL	196			
9.0									
9.5									
10.0									
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	185.3/hr	GILL NET CATCH	3.0/lift	TRAP NET CATCH	25.5/lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF Largemouth bass									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5	2	2.6	0.04	1	22.5				
5.0	1	1.3	0.05	1	23.0				
5.5	1	1.3	0.07	1	23.5				
6.0	1	1.3	0.09	2	24.0				
6.5	1	1.3	0.12	2	24.5				
7.0	1	1.3	0.15	2	25.0				
7.5	1	1.3	0.19	2	25.5				
8.0	5	6.4	0.23	2	26.0				
8.5	9	11.5	0.28	2, 3	TOTAL	78			
9.0	18	23.1	0.33	2, 3					
9.5	14	17.9	0.40	2, 3					
10.0	9	11.5	0.46	2					
10.5									
11.0									
11.5	2	2.6	0.72	2					
12.0	3	3.8	0.82	not aged					
12.5	7	9.0	0.95	3					
13.0	3	3.8	1.08	not aged					
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	104.0/hr	GILL NET CATCH	0/lift	TRAP NET CATCH	0/lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF Redear sunfish									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0	1	2.6	0.04	2	22.0				
4.5	1	2.6	0.06	2	22.5				
5.0	5	13.2	0.08	2	23.0				
5.5	6	15.8	0.11	2	23.5				
6.0	3	7.9	0.15	2	24.0				
6.5	11	28.9	0.20	2	24.5				
7.0	5	13.2	0.25	2	25.0				
7.5	1	2.6	0.31	2	25.5				
8.0	1	2.6	0.38	not aged	26.0				
8.5	1	2.6	0.46		TOTAL	38			
9.0	1	2.6	0.56						
9.5	1	2.6	0.67						
10.0	1	2.6	0.78						
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	30.7/hr	GILL NET CATCH	1.5/lift	TRAP NET CATCH	6.0/lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF Channel catfish									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0	3	13.6	2.46	
1.5					19.5				
2.0					20.0	3	13.6	2.95	
2.5					20.5	1	4.5	3.09	
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5					22.5				
5.0					23.0				
5.5					23.5				
6.0					24.0				
6.5					24.5				
7.0					25.0				
7.5					25.5				
8.0					26.0				
8.5					TOTAL	22			
9.0									
9.5									
10.0									
10.5									
11.0	1	4.5	0.38	not aged					
11.5									
12.0	1	4.5	0.49						
12.5									
13.0									
13.5									
14.0	2	9.1	0.83						
14.5	1	4.5	0.94						
15.0	1	4.5	1.03						
15.5	1	4.5	1.17						
16.0	1	4.5	1.33						
16.5	1	4.5	1.51						
17.0	3	13.6	1.66						
17.5	1	4.5	1.81						
18.0	2	9.1	2.02						
18.5									

ELECTROFISHING CATCH	8.0/hr	GILL NET CATCH	3.5/lift	TRAP NET CATCH	4.5/lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF Black crappie									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5					22.5				
5.0	1	5.3	0.06	2	23.0				
5.5	1	5.3	0.08	2	23.5				
6.0					24.0				
6.5					24.5				
7.0					25.0				
7.5	6	31.6	0.22	2, 3	25.5				
8.0	4	21.1	0.26	3	26.0				
8.5	6	31.6	0.32	3	TOTAL	19			
9.0	1	5.3	0.38	not aged					
9.5									
10.0									
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	6.7/hr	GILL NET CATCH	4.0/lift	TRAP NET CATCH	3.0/lift

Mean length at Capture

Bluegill

Age	Number	Mean TL	Var	SE	Lo 95%CI	Up 95%CI
1	17	2.6	0.16	0.10	2.4	2.8
2	75	4.7	0.47	0.08	4.5	4.8
3	99	6.9	0.62	0.08	6.7	7.0

Largemouth bass

Age	Number	Mean TL	Var	SE	Lo 95%CI	Up 95%CI
1	4	5.1	0.23	0.24	4.6	5.6
2	48	9.3	1.11	0.15	9.0	9.6
3	20	10.5	2.93	0.38	9.7	11.3

Redear sunfish

Age	Number	Mean TL	Var	SE	Lo 95%CI	Up 95%CI
1						
2	33	6.3	0.71	0.15	6.0	6.6

Black crappie

Age	Number	Mean TL	Var	SE	Lo 95%CI	Up 95%CI
1						
2	5	6.9	1.55	0.56	5.7	8.0
3	13	8.4	0.17	0.12	8.1	8.6

Bluegill age-length Key

Length group (in)	Total # number	Sub-sample	Age												
			1	2	3	4	5	6	7	8	9	10	11	12	13
1.0															
1.5	1	0													
2.0	7	3	7												
2.5	6	3	6												
3.0	7	2	4	4											
3.5	7	3		7											
4.0	23	5		23											
4.5	24	5		19	5										
5.0	18	6		15	3										
5.5	9	4		5	5										
6.0	15	5		3	12										
6.5	19	4			19										
7.0	35	5			35										
7.5	21	3			21										
8.0	4	0													
8.5															
9.0															
Total	196	48	17	75	99										

Largemouth bass age-length Key															
Length	Total #	Sub-	Age												
group (in)	number	sample	1	2	3	4	5	6	7	8	9	10	11	12	13
1.0															
1.5															
2.0															
2.5															
3.0															
3.5															
4.0															
4.5	2	2	2												
5.0	1	1	1												
5.5	1	1	1												
6.0	1	1		1											
6.5	1	1		1											
7.0	1	1		1											
7.5	1	1		1											
8.0	5	3		5											
8.5	9	4		7	2										
9.0	18	5		11	7										
9.5	14	4		11	4										
10.0	9	5		9											
10.5															
11.0															
11.5	2	1		2											
12.0	3	0													
12.5	7	2			7										
13.0	3	0													
Total	78	32	4	48	20										

Redear sunfish age-length Key															
Length	Total #	Sub-	Age												
group (in)	number	sample	1	2	3	4	5	6	7	8	9	10	11	12	13
1.0															
1.5															
2.0															
2.5															
3.0															
3.5															
4.0	1	1		1											
4.5	1	1		1											
5.0	5	4		5											
5.5	6	3		6											
6.0	3	3		3											
6.5	11	4		11											
7.0	5	4		5											
7.5	1	1		1											
8.0	1	0													
8.5	1	0													
9.0	1	0													
9.5	1	0													
10.0	1	0													
Total	38	21	0	33											

Black crappie age-length Key															
Length	Total #	Sub-	Age												
group (in)	number	sample	1	2	3	4	5	6	7	8	9	10	11	12	13
1.0															
1.5															
2.0															
2.5															
3.0															
3.5															
4.0															
4.5															
5.0	1	1		1											
5.5	1	1		1											
6.0															
6.5															
7.0	6	6		3	3										
7.5	4	4			4										
8.0	6	4			6										
8.5	1	0													
9.0															
9.5															
10.0															
10.5															
Total	19	16	0	5	13										

Species	YEAR	NUMBER OF	SIZE	BACK CALCULATED LENGTH (inches) AT EACH AGE							
Bluegill	CLASS	FISH AGED	RANGE	I	II	III	IV	V	VI	VII	VIII
Intercept=0.8	2003	7	2.0 - 3.0	1.7							
	2002	20	3.4 - 6.1	1.6	3.5						
	2001	19	4.9 - 7.7	1.6	4.1	6.1					

Species	YEAR	NUMBER OF	SIZE	BACK CALCULATED LENGTH (inches) AT EACH AGE							
Largemouth bass	CLASS	FISH AGED	RANGE	I	II	III	IV	V	VI	VII	VIII
Intercept=0.8	2003	4	4.5 - 5.5	3.7							
	2002	21	6.2 - 11.5	5.1	8.3						
	2001	7	8.6 - 12.7	4.7	8.7	9.8					

Species	YEAR	NUMBER OF	SIZE	BACK CALCULATED LENGTH (inches) AT EACH AGE							
Redear sunfish	CLASS	FISH AGED	RANGE	I	II	III	IV	V	VI	VII	VIII
Intercept=0.6	2003										
	2002	21	4.2 - 7.5	1.5	4.7						

Species	YEAR	NUMBER OF	SIZE	BACK CALCULATED LENGTH (inches) AT EACH AGE							
Black crappie	CLASS	FISH AGED	RANGE	I	II	III	IV	V	VI	VII	VIII
Intercept=1.4	2003										
	2002	5	5.1 - 7.7	2.9	5.6						
	2001	11	7.6 - 8.7	3.1	6.4	7.9					